

AD-A240 043

ON PAGE

Form Approved
OMB No. 0704-0188Public
gathering
contacts
Data

90. 1 hour per response, including the time for reviewing instructions, searching existing data sources, collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Avenue, Washington, DC 20543.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE JULY 1991		3. REPORT TYPE AND DATES COVERED FINAL 1 DEC 88 - 30 NOV 90	
4. TITLE AND SUBTITLE (DURIP) TWO AND THREE DIMENSIONAL IMAGING OF TURBULENT AND UNSTEADY FLOWS				5. FUNDING NUMBERS PE-61104 D PR - 3842	
6. AUTHOR(S) K. R. SREENIVASAN					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) YALE UNIVERSITY DEPT OF MECHANICAL ENGR NEW HAVEN, CT 06520				8. PERFORMING ORGANIZATION REPORT NUMBER AFOSR-TR-91-0018	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) AFOSR/NA BLDG 410 BOLLING AFB DC 20332-6448				10. SPONSORING / MONITORING AGENCY REPORT NUMBER AFOSR-89-0163	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release, distribution unlimited				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) "ALL EQUIPMENT HAS BEEN PURCHASED." <div style="text-align: center;">DTIC ELECTE S SEP 06 1991 D</div> <div style="text-align: right;">91-09748 </div>					
14. SUBJECT TERMS TURBULENCE, LASER				15. NUMBER OF PAGES 2	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED				18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	
19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED		20. LIMITATION OF ABSTRACT U1			

' (DURIP) TWO AND THREE DIMENSIONAL IMAGING OF TURBULENT AND UNSTEADY FLOWS''

Submitted by

K.R. Sreenivasan

Department of Mechanical Engineering

Mason Laboratory, Yale University

New Haven, CT 06520

Tel. Numbers: (203) 432-4345, 432-4223

Summary

The instrumentation grant under consideration here was awarded to Yale University in response to a proposal whose goals were the mapping of two- and three-dimensional passive scalar fields in turbulent flows, particularly round jets and plane wakes. We are happy to report that we have successfully accomplished the task, and that the instrumentation acquired was quite adequate for the purpose. Indeed, it is still being used for other projects pursued under AFOSR sponsorship. Several publications have arisen as a result of the work done under this grant. Equally important, the experience acquired during this work has given us ideas on further measurement techniques for mapping turbulent fields. Needless to say, there is an outstanding need in turbulence for improved measurement techniques. In the sense of that long range goal also, we deem that the goals of the proposal were satisfactorily met.

The principal publications relating to the grant are listed below; a copy of each of them is enclosed. The publications contain all details, and so it was thought that reproducing them separately

would be quite unnecessary. The PI stands ready to answer any questions that may remain unanswered, and takes this opportunity to thank AFOSR for the support.

Publications

The measurement and interpretation of fractal dimensions of the scalar interface in turbulent flows, by R.R. Prasad and K.R. Sreenivasan, Phys. Fluids A **2**, 792-807 (1990)

Quantitative three-dimensional imaging and the structure of passive scalar fields in fully turbulent flows, by R.R. Prasad and K.R. Sreenivasan, J. Fluid Mech. **216**, 1-34 (1990)

Fractals and multifractals in fluid turbulence, by K.R. Sreenivasan, Annu. Rev. Fluid Mech. **23**, 539-600 (1991)

Note: The instrumentation grant financed the purchase of the instruments but not the salaries. The salaries of the personnel who used these instruments and obtained some of the results contained in the above publications were provided by a DARPA (URI) grant. So, the acknowledgment in these papers go for both AFOSR and DARPA.

Accession For	
NTIS	<input checked="" type="checkbox"/>
CRA&I	<input type="checkbox"/>
DTIC	<input type="checkbox"/>
TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution	
Availability Codes	
Dist	Availability Special
A-1	

